

Conveyor belt with ball-type reinforcement on the backing side

Specification

The invention relates to a conveyor belt having a bearing side and a backing side made of elastomer material, as well as an embedded reinforcement carrier, particularly in the form of steel cables or steel cords, or a one-layer or multi-layer reinforcement carrier. In this regard, reference is made to the following prior art, for example: DE 25 32 190 C2, DE 38 01 120 C2, DE 37 35 024 A1, and DE 38 02 963 A1.

Within the scope of a further development, the task consists in making available a conveyor belt having an improved indentation rolling resistance, which therefore results in a lower demand for energy.

This task is accomplished by means of the characterizing part of claim 1, in that the backing side is reinforced with ball-type elements.

Practical embodiments of the invention are indicated in claims 2 to 20.

The invention will now be described on the basis of an exemplary embodiment, making reference to a drawing that shows the cross-section of a conveyor belt.

The conveyor belt 1 comprises a bearing side 2 and a backing side 3, which consist of an elastomer material, in each instance. The conveyor belt furthermore has an embedded reinforcement carrier 4 in the form of steel cables.

The backing side 3 is reinforced with ball-type elements 5 that are disposed within a single layer 6. This layer, in the form of an elastomer matrix, runs close to the reinforcement carrier 4, whereby the ball-type reinforcement extends essentially over the entire width of the conveyor belt. Furthermore, the ball-type elements have essentially the same diameter, whereby the diameter of the ball-type elements corresponds approximately to the layer thickness.

The particular feature of this backing side 3 reinforced by ball-type elements 5 lies in the round surface of the ball-type elements that are introduced, which lead to a lesser indentation rolling resistance. The running properties of the conveyor belt are improved, and this contributes to a reduced demand for energy.

The backing side reinforced with ball-type elements is also referred to as a damping ball-type element mat.

The following tables state the practical diameter and density range of the ball-type elements and the elastomer densities, in Table 1, on the one hand, as well as concrete experimental data within these ranges in Table 2, on the other hand.

Table 1

Ball-type elements			Elastomer density [g/cm ³] (reinforcement layer)
Material	Diameter [mm]	Density [g/cm ³]	
Steel	1-5	7.5-8.7	1.1-1.6
PUR	1-5	1.18-1.24	1.1-1.6
Aluminum	1-5	2.7	1.1-1.6
Glass	1-5	2.6	1.1-1.6
Lead	1-5	11.4	1.1-1.6
POM	1-5	1.41-1.43	1.1-1.6

Table 2

Ball-type elements			Elastomer density [g/cm ³] (reinforcement layer)
Material	Diameter [mm]	Density [g/cm ³]	
Steel	1	8.0	1.1
Steel	5	8.0	1.1
PUR	1	1.2	1.1
PUR	5	1.2	1.1
Lead	5	11.4	1.1
Lead	5	11.4	1.6

The thickness of the reinforcement layer corresponded to the diameter of the ball-type elements in all the experiments.

Reference Symbol List

- 1 conveyor belt
- 2 bearing side (cover plate on bearing side)
- 3 backing side (cover plate on backing side)
- 4 reinforcement carrier (steel cables)
- 5 ball-type elements
- 6 layer of the ball-type elements (reinforcement layer)